

## PATENT COOPERATION TREATY

## PCT



INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY  
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

REC'D 04 JAN 2005

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| Applicant's or agent's file reference<br>1161WOORD01   | <b>FOR FURTHER ACTION</b><br>See Form PCT/IPEA/416   |  |
| International application No.<br>PCT/EP2004/050135   | International filing date (day/month/year)<br>16.02.2004   | Priority date (day/month/year)<br>18.02.2003 |
| International Patent Classification (IPC) or national classification and IPC<br>C07D487/04, A61K31/495, A61P1/04   |  |  |
| Applicant<br>ALTANA PHARMA AG et al.   |  |  |
| <p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 6 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input type="checkbox"/> sent to the applicant and to the International Bureau a total of sheets, as follows:</p> <p><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p> |  |  |
| <p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input checked="" type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>  |  |  |
| Date of submission of the demand<br><br>24.08.2004   | Date of completion of this report<br><br>30.12.2004  |  |
| Name and mailing address of the international preliminary examining authority:<br><br><br>European Patent Office<br>D-80298 Munich<br>Tel. +49 89 2399 - 0 Tx: 523656 epmu d<br>Fax: +49 89 2399 - 4465   | Authorized Officer<br><br>Baston, E<br><br>Telephone No. +49 89 2399-8229<br><br> |  |

**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

**10/545190**  
International application No.  
PCT/EP2004/050135

**JP20 Rec'd PCT/PTO 11 AUG 2005**

**Box No. I Basis of the report**

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
  - ☐ This report is based on translations from the original language into the following language, which is the language of a translation furnished for the purposes of:
    - ☐ international search (under Rules 12.3 and 23.1(b))
    - ☐ publication of the international application (under Rule 12.4)
    - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements\*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):*

**Description, Pages**

1-22 as originally filed

**Claims, Numbers**

1-11 as originally filed

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing
3. ☐ The amendments have resulted in the cancellation of:
    - ☐ the description, pages
    - ☐ the claims, Nos.
    - ☐ the drawings, sheets/figs
    - ☐ the sequence listing (*specify*):
    - ☐ any table(s) related to sequence listing (*specify*):
  4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
    - ☐ the description, pages
    - ☐ the claims, Nos.
    - ☐ the drawings, sheets/figs
    - ☐ the sequence listing (*specify*):
    - ☐ any table(s) related to sequence listing (*specify*):

\* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
PCT/EP2004/050135

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**Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

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1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:

- ☐ the entire international application,  
☒ claims Nos. 10 "with respect to industrial applicability"

because:

- ☒ the said international application, or the said claims Nos. 10 relate to the following subject matter which does not require an international preliminary examination (specify):

**see separate sheet**

- ☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. are so unclear that no meaningful opinion could be formed (*specify*):
- ☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.
- ☐ no international search report has been established for the said claims Nos.
- ☐ the nucleotide and/or amino acid sequence listing does not comply with the standard provided for in Annex C of the Administrative Instructions in that:
- |                            |  |
|----------------------------|--|
| the written form           | <input type="checkbox"/> has not been furnished            |
|                            | <input type="checkbox"/> does not comply with the standard |
| the computer readable form | <input type="checkbox"/> has not been furnished            |
|                            | <input type="checkbox"/> does not comply with the standard |
- ☐ the tables related to the nucleotide and/or amino acid sequence listing, if in computer readable form only, do not comply with the technical requirements provided for in Annex C-*bis* of the Administrative Instructions.
- ☐ See separate sheet for further details

**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
PCT/EP2004/050135

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**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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1. Statement

|                               |             |        |
|-------------------------------|-------------|--------|
| Novelty (N)                   | Yes: Claims | 1-11   |
|                               | No: Claims  |        |
| Inventive step (IS)           | Yes: Claims |        |
|                               | No: Claims  | 1-11   |
| Industrial applicability (IA) | Yes: Claims | 1-9,11 |
|                               | No: Claims  |        |

2. Citations and explanations (Rule 70.7):

**see separate sheet**

**INTERNATIONAL PRELIMINARY  
REPORT ON PATENTABILITY  
(SEPARATE SHEET)**

International application No.

PCT/EP2004/050135

**JC20 Rec'd PCT/PTO 11 AUG 2005**

**To section III**

Claim 10 relates to subject-matter considered by this Authority to be covered by the provisions of Rule 67.1(iv) PCT. Consequently, no opinion will be formulated with respect to the industrial applicability of the subject-matter of this claim (Article 34(4)(a)(I) PCT).

**To section V**

The following documents were cited in the search report and were considered for the examination of the present application:

- D1: EP-A-0 204 285 (FUJISAWA PHARMACEUTICAL CO) 10 December 1986
- D2: KAMINSKI J J ET AL: "ANTIULCER AGENTS 2. GASTRIC ANTISECRETORY, CYTOPROTECTIVE, AND METABOLIC PROPERTIES OF SUBSTITUTED IMIDAZOU1,2-APYRIDINES AND ANALOGUES" JOURNAL OF MEDICINAL CHEMISTRY, AMERICAN CHEMICAL SOCIETY. WASHINGTON, US, vol. 30, no. 11, 1987, pages 2031-2046,
- D3: WO 99/28322 A (DAHLSTROEM MIKAEL ;AMIN KOSRAT (SE); ASTRA AB (SE); NORDBERG PETER) 10 June 1999
- D4: WERMUTH ET AL: "The Practise of Medicinal Chemistry" 1996, PRACTICE OF MEDICINAL CHEMISTRY, XX, XX, PAGE(S) 203-237 ,
- D5: PATENT ABSTRACTS OF JAPAN vol. 1996, no. 01, 31 January 1996 (1996-01-31) & JP 07 242666 A (FUJISAWA PHARMACEUT CO LTD), 19 September 1995
- D6: WO 02/060492 A (CYTOPIA PTY LTD ;BURNS CHRISTOPHER JOHN (AU); WILKS ANDREW FREDERI) 8 August 2002.

The present application relates to imidazopyrazines which are considered to be useful for the treatment of gastrointestinal disorders. According to the examples the compounds are characterized by the presence of a benzylamino group in position 8. Documents D1-D3 disclose similar compounds, also for use in gastrointestinal disorders. Due to the precise definition of the claimed compounds (e.g. R<sup>3</sup> cannot be hydrogen or R<sup>3</sup> is fluoro-C<sub>1-4</sub> alkyl) novelty is acknowledged for claims 1-11 (Art. 33(2) PCT).

Based on common general knowledge (compare also D4), a person skilled in the art would have been able to replace group R<sup>5</sup> (alkyl) in compounds from D3 (page 19, 1st

formula) by fluoro-alkyl in order to arrive at the presently claimed structures.

Also would it have been possible to replace the hydrogen (in similar position to group R<sup>3</sup> of the present application) by a halogen to arrive at compounds from claim 1. Thus in the absence of convincing comparative data revealing any advantages of the presently claimed compounds an inventive step cannot be acknowledged (Art. 33(3) PCT).

For the assessment of the present claim 10 on the question whether it is industrially applicable, no unified criteria exist in the PCT Contracting States. The patentability can also be dependent upon the formulation of the claims. The EPO, for example, does not recognize as industrially applicable the subject-matter of claims to the use of a compound in medical treatment, but may allow, however, claims to a known compound for first use in medical treatment and the use of such a compound for the manufacture of a medicament for a new medical treatment.